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Attorney. Docket: 1302-388 (RD27764-3)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(S): Carter et al. EXAMINER: Timothy J. Kugel  
SERIAL NO.: 10/797,394 GROUP ART UNIT: 1712  
FILED: March 8, 2004 DATED: February 21, 2008  
FOR: STABILIZED POLYORGANOSILOXANE COMPOSITION

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Commissioner for Patents  
P.O. Box 1450  
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REPLY BRIEF

Sir:

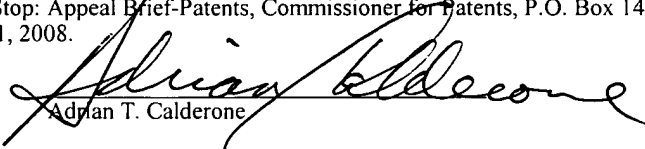
This Reply Brief is being filed in response to the Examiner's Answer dated January 22, 2008. Consideration of this Reply Brief is respectfully requested.

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Dated: February 21, 2008

  
Adrian T. Calderone

### Status of Claims

Claims 1 to 39 are pending in this application.

Claims 1, 14, 18, 19, 33 and 34 are rejected.

Claims 2-13, 15-17, 20-32 and 35-39 are withdrawn from consideration.

The claims on appeal are claims 1, 14, 18, 19, 33 and 34.

Ground of Rejection to be Reviewed on Appeal

The issue raised by the rejection is as follows:

Whether the claims on appeal are properly rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,013,729 (hereinafter, "Tsujiimoto et al.") in view of Publication No. WO/96/16110 (hereinafter, "Karrer").

### Argument

It is respectfully submitted that the Tsujimoto et al. reference has been mischaracterized by the Examiner. First, the Examiner has mistakenly equated the hydrocarbon rubbers of Tsujimoto et al. with polyorganosiloxanes. Second, the hydridosiloxanes of Tsujimoto et al. are confused with vinylsiloxanes. Third, vinylsilanes are mistaken to be vinylsiloxanes. These are factual errors with respect to chemical structures. One skilled in the art would realize that the structures disclosed in the Tsujimoto et al. primary reference are not similar to, or even suggestive of, the claimed composition of Appellants herein.

#### 1. Claims 1 and 33

The present invention claims a composition comprising, inter alia, a polyorganosiloxane. Applicants respectfully submit that Tsujimoto et al. does not disclose a polyorganosiloxane as understood by one skilled in the art.

To the contrary, Tsujimoto et al. is directed to the use of hydrocarbon rubber base polymers which are crosslinked with siloxanes (col. 4, lines 13-col. 6, line 29) by means of a hydrosilylation reaction to provide a dispersed phase, or hydrocarbon rubber base polymers to which a hydrolysable unsaturated organic silane is grafted. (col. 6, line 30 – col. 8, line 47) to provide a matrix.

In the dispersed phase component the maximum level of addition of the organosiloxane to the hydrocarbon rubber component is 30 parts by weight of organosilane crosslinking agent to 100 parts by weight hydrocarbon rubber. (col. 5, lines 48-52). This means that the minimum level of hydrocarbon rubber is no less than about 77% by weight.

With respect to the matrix phase the maximum amount of unsaturated organic silane is 8 parts by weight to 100 parts by weight of the hydrocarbon polymer base resin. (col. 8, lines 32-39). This means that the minimum level of hydrocarbon rubber is no less than about 92.6% by weight.

The polyorganosiloxanes of the present invention are silicones crosslinked with silicones. One skilled in the art would not consider the hydrocarbon polymer based resins of Tsujimoto et al. to be equivalent to polyorganosiloxanes as contemplated by Appellants, or even in the same field of art. The Examiner cites *In re Bigio*, 72 USPQ2d 1209 (Fed. Cir. 1993) in support of the characterization of Tsujimoto et al. as analogous art under findings of essentially the same function and structure. However, as has been shown above, the Tsujimoto et al. composition of hydrocarbon polymer crosslinked with a minor amount of siloxane does not have the same structure as a polyorganosiloxane. To equate the hydrocarbon rubber based polymer with polyorganosiloxanes constitutes a factual error. There is, furthermore, no clear teaching that these compositions may be used interchangeably. Absent such a teaching the Examiner is assuming facts not in evidence.

The Office Action's reference to Applicants' use of the transitional term "comprising" is not on point. Certainly, the use of the open-ended term "comprising" allows for the inclusion of added components such as fillers or other agents to the recited polyorganosiloxane and hindered amine light stabilizer. However, what is at issue here is not additional components, but what qualifies as a polyorganosiloxane. One must consider a compound as a combined whole, not as a mere mixture of parts. Water may be the chemically combined atoms of hydrogen and oxygen but has the properties of neither one. Accordingly, the

hydrocarbon rubbers of Tsujimoto et al., though crosslinked or grafted with minor amounts of siloxanes do not constitute, do not have the same properties as, and are not equivalent to polyorganosiloxanes. Thus, a critical component of Applicants' claims is not disclosed or suggested by Tsujimoto et al.

## 2. Claim 14

This deficiency of Tsujimoto et al. is even more evident in separately grouped claim 14 wherein Appellants' polyorganosiloxane is defined as the reaction product of a non-cyclic vinylsiloxane fluid and an organohydrogensiloxane crosslinker. Tsujimoto et al. teaches the reaction product of a hydrocarbon rubber with a linear organohydrogensiloxane cross linker (Col. 5). However, the linear organohydrogen siloxane crosslinkers are not vinylsiloxanes. More particularly, there is a confusion in the Office Action between the hydridosiloxanes of Tsujimoto et al. with vinylsiloxanes. The hydridosiloxanes (column 5) possess monovalent R groups, which can be alkyl, alkoxy, phenyl, aryl, or aryloxy. The non-cyclic R groups are saturated, not alkenyl. Vinyl groups are not included in the listing of possible groups. There is a vast structural, and chemical difference between  $-H$ ,  $-C_nH_{2n+1}$  alkyl groups, alkoxy groups, etc. on the one hand, and  $-CH=CH_2$  vinyl groups on the other hand. The structures and chemistry are different and equating them constitutes clear factual error.

Tsujimoto et al. teaches the grafting of vinylsilanes onto hydrocarbon polymer rubber base resin. (Col. 8, lines 9-22). However, the vinylsilanes do not qualify as vinylsiloxanes. Silanes have a single silicon atom and are therefore monomeric. Siloxanes possess at least two silicon atoms connected by an oxygen atom and therefore are at least dimeric, trimeric, oligomeric, or polymeric. There is no teaching cited by the Examiner that the

vinylsilanes of Tsujimoto et al. are interchangeable with vinylsiloxanes. Absent such teachings the Examiner is assuming facts not in evidence. Accordingly, to equate the vinylsilanes of Tsujimoto et al. with the vinylsiloxanes of Appellants' claims constitutes a clear factual error of chemistry. Accordingly, claim 14 is even further distinguishable over Tsujimoto et al.

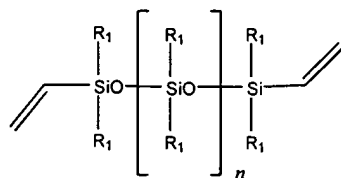
### 3. Claim 18

With respect to separated grouped claim 18, the Examiner's Answer states:

Appellant still further argues that the vinylsiloxanes of claim 18 does not contain alkoxy groups; however, in the siloxane of Tsujimoto, alkoxy groups may be present, but are not required and therefore the reference meets the claims.

The Examiner's Answer is correct insofar as the linear organohydrogen siloxanes listed in column 5 of Tsujimoto et al. possess R groups which do not necessarily have to be alkoxy. However, as stated above, none of the R groups is disclosed as being a vinyl group. Accordingly, the linear organohydrogen siloxanes of Tsujimoto et al. are not vinylsiloxanes or equivalent thereto. Also, as stated above, the vinylsilanes of column 8 of Tsujimoto et al. are not vinylsiloxanes or equivalent thereto.

Moreover, the recitations in claim 18 are directed to a vinylsiloxane fluid having a specific structure:



which is neither disclosed nor suggested by Tsujimoto et al., nor does Tsujimoto et al. disclose the recitations directed to the value of n such that the viscosity of the composition falls within a range of between about 100 centipoise and about 200,000 centipoise at 25°C.

Additionally, Appellants have explained in the specification why the present invention is unexpectedly useful as a light bulb coating material. Referring to paragraphs [0008]-[0009] the specification states:

Historically, HALS were not suggested for use with silicones because of the concern that amines will poison a cure catalyst and thus inhibit the crosslinking reaction. Additionally, it has been believed that nonoxidative cycloreversion rather than oxidation is the predominant mode of polyorganosiloxane degradation at elevated temperatures. A HALS is an antioxidant. Cycloreversion is not influenced by oxygen. Hence, it has been believed that antioxidant HALS would be ineffective with polyorganosiloxanes.

Surprisingly, it has been found in accordance with the present invention that organopolysiloxane compositions can be stabilized with a HALS, or a modified HALS. While applicants do not intend to be bound by the following explanation, it is believed that both cycloreversion and oxidation occur simultaneously at elevated temperatures. However, oxidation appears to be the predominant mechanism at temperatures greater than 185°C. in an atmosphere containing oxygen. These conditions are the usual conditions for use of polyorganosiloxanes as a bulb coating.

Accordingly, at the conditions under which the composition of the present invention is intended to be used it would not at all be obvious to combine a HALS with a polyorganosiloxane.

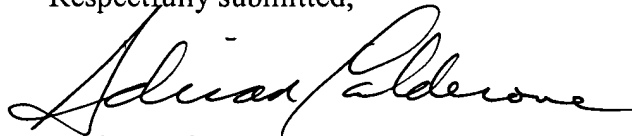
In any case, the Karrer reference adds nothing which would cure the deficiencies of the Tsujimoto et al. reference as indicated above. Even if these references were to be combined the presently claimed invention would not be disclosed or suggested.



## CONCLUSION

In summary, the rejection of Appellants' claims is based on clear factual and reversible errors on at least three points: equating siloxane crosslinked hydrocarbon rubbers with polyorganosiloxanes, equating hydridosiloxanes having only saturated linear groups with vinylsiloxanes, and equating vinylsilanes with vinylsiloxanes. Appellants respectfully submit that all of the claims are allowable over the cited prior art. Reversal of the rejection by the Board is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Adrian T. Calderone", written in a cursive style.

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